

Sept. 14, 1943.

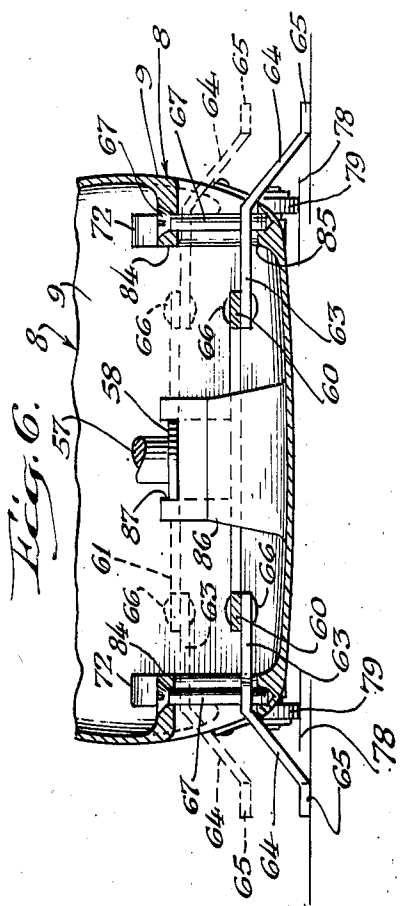
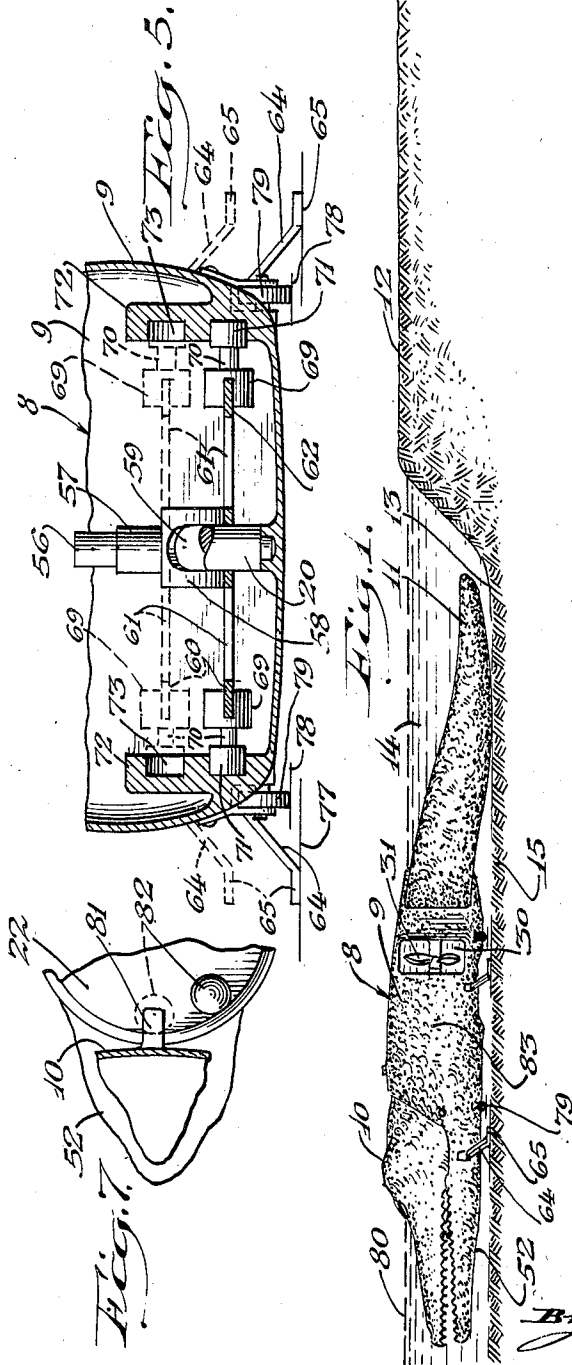
F. E. THOMAS

2,329,564

TOY CROCODILE

Filed July 18, 1942

2 Sheets-Sheet 1



Inventor:
Frank E. Thomas
By David M. Heller.
Attorney.

Sept. 14, 1943.

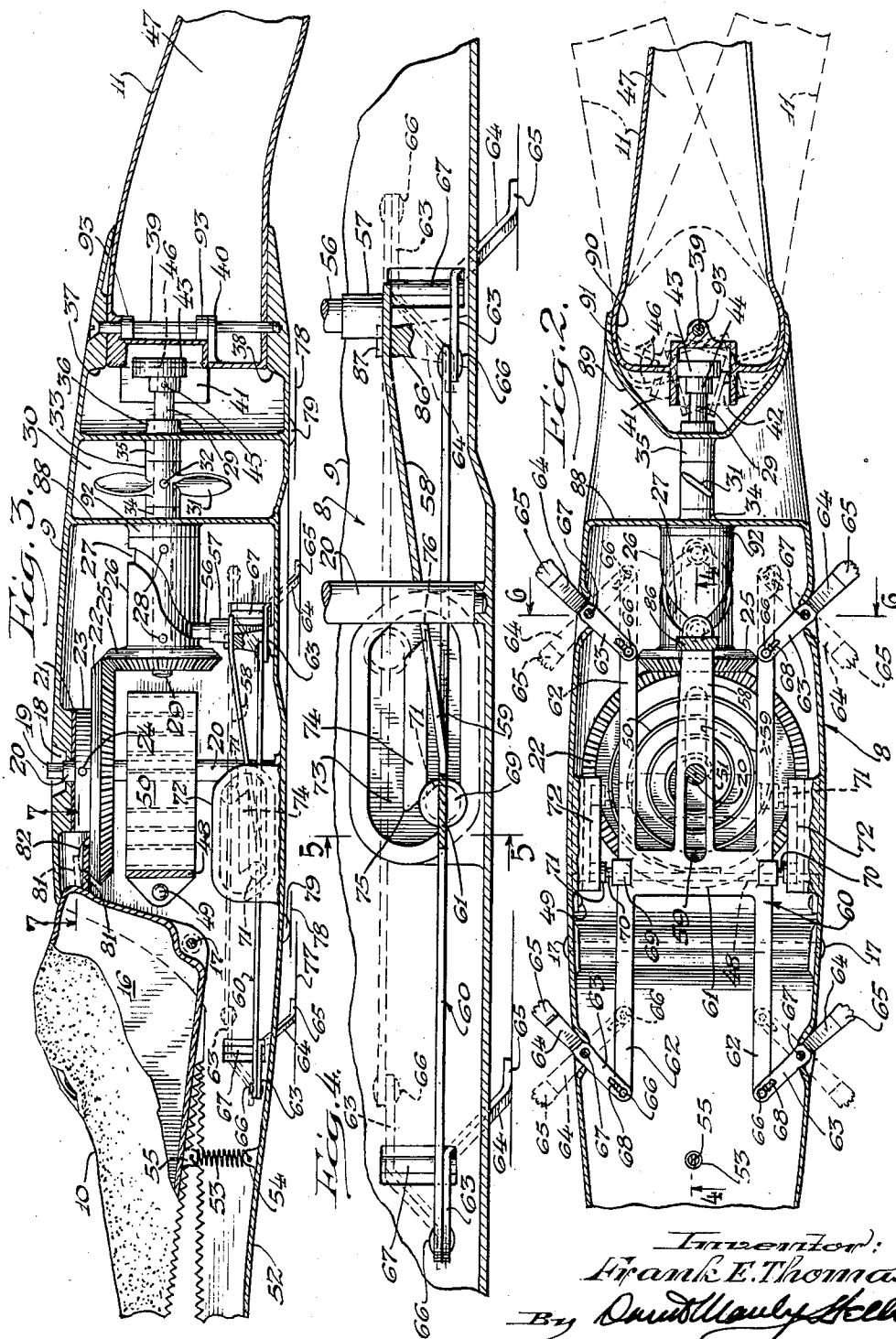
F. E. THOMAS

2,329,564

TOY CROCODILE

Filed July 18, 1942

2 Sheets-Sheet 2



Inventor:
Frank E. Thomas,
By David M. Kelly, Attorney.

UNITED STATES PATENT OFFICE

2,329,564

TOY CROCODILE

Frank E. Thomas, Chicago, Ill.

Application July 18, 1942, Serial No. 451,388

7 Claims. (Cl. 46—123)

My invention relates to toy crocodiles, and has for one of its objects the making of a miniature animal of the aforementioned character; it being made of such construction as to permit the toy to be animated and simulate the creep of a crocodile, in other words, providing as well, amphibian animation adapting the said toy for movement on land as well as in water.

One object of my invention is to provide a toy of the aforementioned character which in addition to movement on the ground or water will also open its mouth and wag its tail while in motion thus simulating the movements of an animal of this type.

Another object of my invention is to provide an animated toy crocodile which is adapted to move on land and be partially submerged below the surface of water; the toy being adapted to have its mechanism charged so that when it is released on the edge of a pond it will continue its motion on the shore and if directed toward the water in the pond will continue its movement partially submerged below the surface of the said pond.

Another object of my invention is to provide a novel propeller means which functions as a governor for the spring motivated means when the device is moving on the ground as a supporting surface and which acts as a propeller when the device is motivated at a submerged depth below the surface of a liquid.

Another and further object of my invention is to provide cam actuated leg motivating means synchronized with the movement of the head and the tail of the said toy crocodile comprising my invention.

Other objects, features and advantages resident in my invention will become apparent from an examination of the accompanying drawings and the ensuing description, wherein like numerals represent like parts; and in which:

Fig. 1 represents a front elevational view of my invention the same being partially submerged below the surface of a pond.

Fig. 2 is a view looking at the bottom of the assembly of structural elements of Figure 3, the bottom being broken away in section so as to expose the operating combination of elements comprising my invention.

Fig. 3 is an enlarged longitudinal cross-sectional view in order to expose the structural elements comprising my invention.

Fig. 4 is a cross-sectional view on the line 4—4 of Figure 2, showing in enlargement the cam

structure necessary to provide mobility to my invention.

Fig. 5 is a longitudinal cross-sectional view on the line 5—5 of Figure 4.

Fig. 6 is a staggered transversal cross-sectional view on the line 6—6 of Figure 2.

Fig. 7 is a fragmentary transversal cross-sectional view on the line 7—7 of Figure 3.

Referring to the various views on the drawings, 8 generally, designates my invention, it being comprised of a body element or structure 9, a movable upper head element 10, and a swivelable tail element or structure 11. In Figure 1, 12 represents the bank or shore of a pond and 14 represents the liquid or water in the pond, the bed of the pond being, generally, designated 15 if it be one that is artificial or rather shallow in nature so as to permit the type of toy comprising my invention to complement its propulsion thru the water by the propeller means as well as the movement of the legs operating on the bed 15 of the pond; if the pond is much deeper, then the amphibian structure comprising my invention will be partially submerged as shown in Figure 1, and float approximately in that position partly above the surface 80 so that the leg movement will simulate travel or swimming action when in reality the propulsion will be effected by the propeller means.

The structural elements comprising the motivating means and the operative means will be further elucidated in the description of the various other sectional views representing the drawings to fully elucidate the operation of my invention.

The movable part of the head member 10 is made to represent the greatest portion of the head including the upper jaw and is provided with a suitable lug to permit the same to be pivoted at 17 within the body structure, generally, designated 9. The lower part of the jaw may be part of the body and may be constructed so that water will not enter within and thus keep the inner compartment free from water. The upper jaw moves with respect to the lower or stationary jaw 52, the upper jaw being provided with a central lug portion 55, the lower jaw with a central lug portion 54, and a spring 53 anchored at the lug portions 54 and 55 respectively, which has a tendency to keep the upper jaw in open position. The closing of the jaw at predetermined intervals is caused by the rotation of the gear element 22 which has a cam protuberance thereon 82 which bumps or intermittently causes the extension 81 to be moved up-

ward to the dotted position thus closing the jaws of the crocodile.

Motion to the toy is imparted by a spring motor made up by enclosing within the body 9 bevel gears 22 and 25 meshing with one another at right angles. Bevel gear 25 is mounted on a shaft 29 which is journaled within the bearings 36, 35 and 34 and 92. In between the bearing portions 34 and 35 the shaft has mounted thereon the propeller 31 having the hub 33, the pin 32 being driven thru the shaft and propeller hub to secure the same integrally therewith. On the side 88 with the hub portion 92 and adjacent its surface is mounted the gear 25 having a rather lengthy hub extension 26 into which a cam groove 27 is cut, the cam groove being of a helical type in order to provide certain slidable movement to the roller 56 engaging therein. The gear 25 is secured integrally to the shaft 29 by virtue of the pin 28. The bevel gear 22 is provided with a hub portion 23 secured to the shaft 20 by virtue of a pin 24. The shaft is suitably journaled in a suitably recessed bearing portion in the body at the top and bottom so as to confine the same to rotary movement.

The upper portion of the body is counter-sunk as at 18 in order to permit sufficient clearance for a key which is to engage the square shank 19 of the shaft 20 when it is desired to wind up the spring element 50. One end of the flat spring element 50 is connected to the center of the shaft at 51, the other end 48 of the spring being anchored to the body at 49, so that when this shaft is rotated in one direction the spring is placed under tension and charged with potential energy, hence, when it is released it will cause the gearing to operate the various mechanism to which it is connected in the opposed direction to provide the function and animation necessary.

Between the hub 23 of the gear 22 and the body 9, a gasket 21, of resilient material or cork, is secured in order to prevent leakage of any water into the body and into the compartment of the body, in other words, to prevent the compartment from becoming filled with water. At the bottom of the body portion 9 and on opposite sides as shown in Figure 2, two cam hubs 72 are provided which have a race-way and a central parallelogramic section 74 having the points 75 and 76 which are necessary in order to provide the movement to the legs, generally, designated 63. The legs are connected to an H formed structure having arms 62 interconnected by the central portion 61 from which emanates the portion 58 provided with a slot 59 providing sufficient clearance around the shaft 20 when the H member is moved from left to right as indicated by dotted lines in Figure 2.

The portion 58 has secured at its terminus the shoulder stud 57 having the roller portion 56 which engages the helical cam curve 27 heretofore mentioned and explained. The element 58 is suitably supported by the hub-like portion 86 having a recess therein 87 within which the portion 58 of the H element is suitably and slidably confined. The legs are formed of a horizontal portion 63 continuing with an oblique bent portion 64 and a contacting or paw portion 65, the legs being pivotally secured by virtue of pivotal connections 66, and being also pivotally positioned on the stud 57 so as to permit the legs to slide up and down and also move arcuately on the stud. The legs are pivotally connected at their extreme point at 66

to the arms 62 of the H element; the portion 63 of the legs being provided with suitable slots 68 to provide for the lost motion necessary when the H element 60 slides from left to right in view of the fact that the legs are pivotally secured at 67. The movement of the H element by virtue of the extension 58 and the cam 27 which cause the H element to move from left to right and back to its original position, comprising a cycle of movement in one direction and then a return movement causing the legs to move arcuately as indicated by the dotted lines in Figure 2.

The slot 59 is a guide slot as well as a clearance slot for the shaft 20 and so as not to interfere with its movement. The H element is also provided with hub extensions 69 integral with the portion 61 at its ends into which are driven shafts or pins 70 and on which are mounted the roller bearings 71 their province being to operate in the race-way 73 of the cam. When the extension 58 causes the H element to move from left to right and back to its original position, the rollers 71 are caused to move in the track-way of the cam 73.

When the roller is in the position shown in Figure 4, it is ready to move in a direction that is counter-clockwise, it will continue to move until the roller 71 reaches the protuberance 76. It is to be noted that the portion 58 being of a springy nature is caused to be deflected below the normal level shown by the dotted lines 58 in Figure 3, so that when the roller 71 reaches the protuberance 76 the spring tension of 58 will cause the roller to rise to the dotted position indicated, thence on its further and continued travel to the left the roller 71 is caused to move to the left and will ride on the upper portion of track-way 73, until it reaches the protuberance 75 which will permit the roller to fall down and follow the inclines of the parallelogramic structure, thus confining its path or orbit within the race-way 73.

This movement imparts to the legs an arcuate movement as indicated in the full and dotted lines in Figure 2 causing the legs at the same time to move up and down on the stud or guide 67, thus causing the legs to contact the ground surface 77 and thus propel the figure forward on the ground and then release the same to rest on the rollers 79. The rollers are positioned on an imaginary surface 78 above the ground surface 77 so that if any momentum is acquired it is imparted to the figure resulting in further motion when the legs are out of contact with the ground surface, the figure being further caused to move along by virtue of the momentum imparting motion to the rollers 79.

It is to be noted that when the figure is operated on a land surface or ground surface, the propeller blades 31 will impart a governing action to the mechanism and thus the propeller blades rotating thru the air will tend to govern and regulate the action of the gearing mechanism and the spring. When the toy is floated or partially submerged within a vessel or in a pond, the propeller blades 31 will not only govern or regulate the action or movement of the gears and spring mechanism, but will also tend to propel the toy forward in the liquid.

The open area 30 within which the propeller is confined and the tapered section 89 which forms a housing for the knuckle portion 90 afford propulsion to the toy by virtue of the water being pushed rearwardly. The tail element 11 pivotally supported between portions 37 and 38

which is a water-tight fit against the surface 91 is caused to move as indicated by the dotted lines in Figure 2, while the shaft 29 is rotating. The action is performed by virtue of the tail having a hub-like connection designated 41 with an opening 42. A cam 43 rotating within the recess 42 causes the tail to be oscillated upon the stud 39 which is secured to the body 9 as indicated, and the tail hub 41 is provided with two lugs 93 which pivotably operate on the stud 39 and at the same time rest on the lug support 40. The tail 47 by means of web 46 connecting it to the hub 41 is caused to oscillate sideways as indicated by the dotted lines in Figure 2.

The cam 43 has a hub portion 44 which is secured to the shaft 29 by virtue of the pin 45, thus it can be seen that once the spring 50 is energized (while charging the same the propeller 31 may be held by the fingers of one hand so as to control reverse rotation), and afterward the device may be released on the ground whence the cam 27 will impart a sliding movement to the extension 58 of the H element 60, thus causing the same to have its rollers 71 to follow the orbit of the race-way 73 and thus impart to the legs a radial movement affording at the same time contact with the ground, or a radial movement in one direction causing the toy to move, and an idling movement for the remainder of the cycle bringing the legs back to normal and out of contact with the ground surface. Simultaneously with this action, the tail element will be caused to move sideways intermittently and the upper part of the head including the upper jaw will be closed and opened intermittently thus simulating the natural actions of the animal which this toy represents in animated form.

The compartment 47 within the tail section, and the compartment 16 within the head section may be charged with compressed air in order to adapt the toy for partial submersion and aid it in floating slightly above the surface of the water. The structural elements wherever possible such as the gears, cam, hub, and body may be made of a very light fibre material so as to adapt it and make it more buoyant. The studs 67 are secured in place by the lug extensions 84 and 85 within the body 9 and permit the legs to pivotably operate thereupon as well as to slide thereupon in an up and down direction.

The entire structure may be covered with cork pulp and made to resemble the scaly anatomy 83 of such animals.

I believe I have described rather succinctly the nature of the construction and operation of my invention in order to enable those familiar with the art to practice my invention, and inasmuch as it may be susceptible of various modifications, alterations and improvements, I reserve the right to all such modifications, alterations and improvements which come within the scope and spirit of my invention, and within the purview of the accompanying drawings and the foregoing description; my invention to be limited only to the subjoined or appended claims.

Having thus described and revealed my invention what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising, a body having an open recess, prime motivating means mounted in said body, propeller means mounted on said prime motivating means and within the open recess in said body, and leg means articulately secured to said body intermediate their ends and adapted to slidable move-

ment vertically, the inner ends of said leg means articulately secured to said motivating means.

2. A device of the character described comprising, a body having an open recess, prime motivating means mounted in said body, propeller means mounted on said prime motivating means and within the open recess in said body, leg means articulately secured to said body intermediate their ends and adapted to slidable movement vertically, the inner ends of said leg means articulately secured to said prime motivating means, and head means articulately secured to said body and adapted to move pivotally in a vertical direction.

3. A device of the character described comprising, a body having an open recess, prime motivating means mounted in said body, propeller means mounted on said prime motivating means and within the open recess in said body, leg means articulately secured to said body intermediate their ends and adapted to slidable movement vertically, the inner ends of said leg means articulately secured to said prime motivating means, head means articulately secured to said body and adapted to move pivotally in a vertical direction, and tail means articulately secured to said body means and adapted to move intermittently in a direction transverse to the movement of the said head means.

4. A device of the character described comprising, body means, prime motivating means confined within said body means, head means articulately secured to said body means, tail means articulately secured to said body means, the said head means and the said tail means adapted to be intermittently operated by the said prime motivating means, leg means articulately secured to said body means, and parallelogramic cam means associated with said leg means.

5. A device of the character described comprising, body means, prime motivating means confined within said body means, head means articulately secured to said body means, tail means articulately secured to said body means, the said head means and the said tail means adapted to be intermittently operated by the said prime motivating means, leg means articulately secured to said body means, and parallelogramic cam means associated with said leg means, the said prime motivating means adapted to propel the said device in an air medium and a liquid medium.

6. A device of the character described comprising, body means, prime motivating means confined within said body means, head means articulately secured to said body means, tail means articulately secured to said body means, the said head means and the said tail means adapted to be intermittently operated by the said prime motivating means, leg means articulately secured to said body means, and parallelogramic cam means associated with said leg means, the said motivating means adapted to propel the said device in an air medium and a liquid medium, the said motivating means adapted to propel the said device simultaneously moving the said head means in a vertical direction pivotally and the said tail means in a direction transverse to the movement of the said head means.

7. In a device of the character described, parallelogramic cam means associated with prime motivating means and articulately secured leg means, the said cam means being adapted to impart intermittent impetus to the said leg means.

FRANK E. THOMAS.